

Test: Introduction to Engineering Materials

Task 1. Choose the correct answer for each question.

1. _____ **What is the main focus of material science in engineering?**
 - a) The study of living organisms
 - b) The investigation of the relationship between the structure of materials and their properties
 - c) The design of electronic circuits
 - d) The chemistry of gases
2. _____ **Which of the following is a property that differentiates gold from iron?**
 - a) Color
 - b) Density
 - c) Corrosion resistance
 - d) All of the above
3. _____ **What are the basic building blocks of molecules?**
 - a) Cells
 - b) Atoms
 - c) Compounds
 - d) Particles
4. _____ **Which of the following is NOT a classification of engineering materials?**
 - a) Biological materials
 - b) Biomaterials
 - c) Metals
 - d) Ceramics
5. _____ **Ferrous materials primarily contain which element?**
 - a) Copper
 - b) Aluminum
 - c) Iron

Task 2. Indicate whether the statement is true or false.

6. _____ The knowledge of materials is only important for manufacturing, not for design.
7. _____ All solid materials consist of molecules that are bonded together.
8. _____ Organic polymers are classified under engineering materials.
9. _____ The atomic structure of a material does not affect its properties.
10. _____ The manufacturing process has no effect on the properties of materials.

Task 3. Read the text about the engineering materials.

1. _____ Engineering materials are fundamental to mechanical construction and design, encompassing a wide range of solids with unique characteristics.
2. _____ Material science examines the relationship between a material's structure and its properties; for instance, metals like steel and aluminum offer strength and durability, while polymers like plastic provide lightweight flexibility.
3. _____ Solid materials consist of molecules composed of atoms, and their atomic arrangement determines key properties such as hardness and thermal conductivity. Understanding these properties is crucial for engineers in selecting suitable materials for specific applications.
4. _____ Materials are classified based on criteria like chemical composition and function, including metals (ferrous and non-ferrous), ceramics, organic polymers, composites, and biomaterials. Each category serves distinct engineering roles, from building sturdy structures to developing lightweight components.
5. _____ A solid grasp of engineering materials is essential for effective design and manufacturing, allowing engineers to create reliable, high-performance products that meet modern demands.

1) Choose the correct heading (A- G) for each abstract (1-5).

- A.** Importance of Material Knowledge
- B.** Classification of Engineering Materials
- C.** Future Trends in Engineering Materials
- D.** Introduction to Engineering Materials
- E.** Applications of Engineering Materials
- F.** The Role of Material Science
- G.** Structure and Properties of Solid Materials

2) Match the properties mentioned in the text with their opposites.

| | |
|------------|----------------------------|
| Soft | Ductile |
| Weak | Transparent |
| Brittle | Hard |
| Rigid | Corrosion-resistant |
| Opaque | Strong |
| Insulative | Flexible |
| Unbendable | Malleable |
| Corrosive | Lightweight |
| Fragile | Conductive |
| Heavy | Durable |

Task 4. Fill in the blanks with the appropriate words from the word bank.

Word Bank: (material, properties, molecules, atoms, engineer)

1. _____ refers to the study of the relationship between the structure of materials and their _____.
2. All solid materials consist of large numbers of _____ bonded together.
3. Each molecule is composed of tiny particles called _____.
4. The knowledge of materials is important for a design _____.

Task 5. Fill in the blanks with the appropriate words from the word bank.

Word Bank: (ferrous, ceramics, polymers, composites, metals)

5. Common engineering materials can be classified into groups such as _____, ceramics, and organic _____.
6. _____ materials contain iron, while non-ferrous materials do not.
7. _____ are made by combining two or more different materials to obtain improved properties.

Task 6. Fill in the blanks with the appropriate words from the word bank.

Word Bank: (transparent, waterproof, insulator, strong, flexible)

8. Glass is a _____ material that allows sunlight to pass through, making it suitable for greenhouses.
9. Nylon is often used to make _____ materials for umbrellas due to its ability to repel water.
10. Styrofoam is considered a good thermal _____ because it reduces heat transfer.
11. Rubber is an example of a _____ material that can bend without breaking.